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(54) Plastic reclosable fastener with intermittent deformations.

(57) A fastener structure for a thermoplastic bag (B) comprises reclosable interlocking profile elements (13,14) adapted to be secured throughout the length thereof to the respective side walls (11,12) of the bag, at least one of said profile elements being deformed at spaced intervals (15a,16a) along the length thereof to cooperate with non-deformed portions on the other profile element (14), the deformations (15a) being constructed and arranged to provide an intermittent clicking sensation as the profile elements (13,14) are pressed into interlocking relation along the length of said profile elements to close fastener structure thereby providing confirmation by sound and/or touch to the user that the fastener structure is closed.

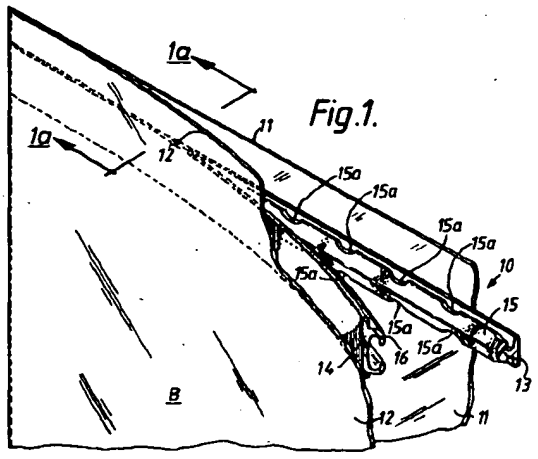

Fig.1.

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The present invention relates a fastener structure for a thermoplastic bag; and to a thermoplastic bag provided with such a fastening structure. The invention particularly relates to a fastening structure of the zipper type.

A plastic zipper bag normally has a continuous profile along the top of the bag in the form of reclosable interlocking male and female elements. Such bags are often difficult to close because of the difficulty of lining up the male and female elements so they will be in position to be closed, and once the closing has been attempted, the user is not certain that the bag is really closed. This is particularly a problem where the zippers are of small construction such for example as on plastic zipper sandwich bags. It is also a problem on bags used inside of breakfast food boxes where it is difficult to see whether or not the male and female elements are aligned properly so that they may be closed.

According to one aspect of the invention there is provided a fastener structure for a thermoplastic bag, comprising reclosable interlocking profile elements adapted to be secured throughout the length thereof to the respective side walls of the bag, at least one of said profile elements being deformed at spaced intervals along the length thereof to cooperate with non-deformed portions on the other profile element, the deformations being constructed and arranged to provide an intermittent clicking sensation as the profile elements are pressed into interlocking relation along the length of said profile elements to close fastener structure thereby providing confirmation by sound and/or touch to the user that the fastener structure is closed.

Preferably both of said profile elements are hook-shaped.

The profile elements are desirably formed integral with the respective side walls of the bag; and are preferably deformed at alternating spaced locations.

In a preferred construction the profile elements are male and female elements, either one of which, or both of which, may be deformed at spaced intervals along the length thereof. Preferably the male profile element is deformed at spaced intervals along the length thereof and the female profile element is deformed at spaced intervals along the length thereof which alternate with the spaced intervals on the male profile element.

It is preferred that the reclosable interlocking male and female profile elements are in the form of rib and groove elements respectively. The rib and/or groove elements may be deformed at spaced intervals along the length thereof.

The deformations may be in the form of a depression in an edge of at least one of the interlocking profile elements.

According to another aspect of the invention there is provided a thermoplastic bag having a mouth along which is disposed a fastener structure as described above.

Reference is now made to the accompanying drawings, in which:

Fig. 1 is a fractional perspective view on enlarged scale of a thermoplastic bag having a reclosable fastener embodying the present invention;

Fig. 1a is a sectional view on enlarged scale along the lines la-1a in Fig. 1;

Fig. 2 is a fractional perspective view on enlarged scale of another reclosable fastener embodying the present invention;

Fig. 2a is a sectional view on enlarged scale along the lines 2a-2a in Fig. 2;

Fig. 3 is a fractional perspective view on enlarged scale of another embodiment of the present invention;

Fig. 3a is a sectional view on enlarged scale along the lines 3a-3a in Fig. 3;

Fig. 3b is a fractional elevational view along the lines 3b-3b in Fig. 3;

Fig. 4 is a fractional perspective view on enlarged scale of another embodiment of the present invention;

Fig. 4a is a sectional view on enlarged scale along the lines 4a-4a in Fig. 4;

Fig. 5 is a fractional perspective view on enlarged scale of a further embodiment of the present invention;

Fig. 5a is a sectional view on enlarged scale along the lines 5a-5a in Fig. 5;

Fig. 6 is a fractional perspective view on enlarged scale of a further embodiment of the present invention;

Fig. 6a is a sectional view on enlarged scale along the lines 6a-6a in Fig. 6; and

Fig. 6b is a fractional elevational view along the lines 6b-6b in Fig. 6.

Referring to Fig. 1 there is illustrated a thermoplastic bag B having a profiled plastic reclosable fastener structure or zipper 10 embodying the present invention. The zipper 10 is particularly suited for thermoplastic bags and the like and extends along the mouth of the thermoplastic bag B. The bag B may be made from any suitable thermoplastic film such for example as polyethylene or polypropylene or equivalent material. The bag B is formed by a pair of flexible plastic sheets 11 and 12 joined at the bottom and having a fastener comprising reclosable interlocking profile elements 13 and 14 secured throughout the length thereof to the respective side walls of the bag. The profile elements may be extruded separately and attached to the respective sides of the bag mouth or they may be extruded integral with the sides of the bag.

The interlocking profile elements preferably have complementary cross-section shapes such that they are closed by pressing the elements together. An example of such configuration is shown in U.S. Patent No. Re. 28,969.

As shown in Figs. 1 and 1a the interlocking profile elements comprise male and female profile elements in the form of rib and groove elements 15 and 16 respectively. The rib element 15 is deformed at spaced intervals 15a along the length thereof to provide an intermittent clicking sensation as the rib and groove elements are pressed into interlocking relation along the length of the profile elements to close the reclosable fastener thereby providing confirmation by sound and/or touch to the user that the fastener 10 is closed.

The deformations 15a may be made on one or both sides of the rib 15. Obviously, the more deformations that are provided in the rib 15, the greater clicking sensation of sound and/or touch to the user. The deformations 15a may be made in the sides of the rib 15 or they may be made at spaced intervals in the top of the rib 15. When the deformations are made in the top of the rib 15, this causes the edges of the rib to widen at the spaced intervals which in turn causes an intermittent clicking sensation as the rib and groove elements are pressed into interlocking relation along the length thereof to close the reclosable fastener thereby providing confirmation by sound and/or touch to the user that the fastener is closed. It is of course to be understood that this intermittent clicking sensation will also be provided in opening the fastener. However, the importance of this feature is in the closing of the fastener so that the user will be ensured that the fastener is closed.

Referring to Figs. 2 and 2a there is illustrated another embodiment of the invention. Corresponding parts have been identified with corresponding reference characters. In this embodiment, the reclosable fastener 10' extends along the mouth of the bag B' and the fastener 10' comprises reclosable interlocking profile elements 13' and 14' secured throughout the length thereof to the respective side walls 11' and 12' of the bag.

The groove element 16' on the profile element 14' is provided with deformations 16a' at spaced intervals along the length thereof to provide an intermittent clicking sensation as the groove element 16' and rib element 15' on profile element 13' are pressed into interlocking relation along the length of these elements to close the reclosable fastener 10' thereby providing confirmation by sound and/or touch to the user that the fastener 10' is closed. It is to be understood that the deformation 16a' may be provided on one or both sides of the groove element 16'.

Referring to Figs. 3, 3a and 3b there is disclosed a further embodiment of the invention. Corresponding parts have been identified with corresponding reference characters. In this embodiment the reclosable fastener 10" comprises reclosable interlocking profile elements 13" and 14" secured throughout the length thereof to the respective side walls 11" and 12" of the bag B".

The reclosable interlocking profile elements 13" and 14" are male and female elements in the form of rib and groove elements 15", 16" and each of these elements is deformed at alternating spaced intervals along the length thereof as indicated at 15a" and 16a". As may be seen in Figs. 3, 3a and 3b the deformations 15a" in the rib 15" are spaced along the length thereof and offset from the deformations 16a" in the mating groove elements 16".

Thus when the interlocking profile elements 13" and 14" and pressed together to close the reclosable fastener 10" the deformations 15a" in the rib 15" will engage a non-deformed section of the groove element 16" and the deformations 16a" in the groove element 16" will engage a non-deformed sections of the rib element 15". This provides an intermittent clicking sensation as the rib and groove elements 15" and 16" on profile elements 13" and 14" are pressed into interlocking relation to close the reclosable fastener 10" thereby providing confirmation by sound and/or touch to the user that the fastener 10" is closed.

While the deformations 15a" have been shown on both sides of the rib element 15" and the deformations 16a" have been shown on both sides of the groove element 16" it is to be understood that they may be provided on only one side of the respective rib and groove elements if desired.

Referring to Figs. 4 and 4a there is illustrated a further embodiment of the invention wherein the reclosable interlocking profile elements are of hook-shaped configuration. An example of this configuration is shown in US-A-4561109. In Fig. 4 there is illustrated a reclosable fastener 20 extending along the mouth of the bag B2, the fastener comprising reclosable interlocking profile elements 21 and 22 secured throughout the length thereof to the respective side walls 17, 18 of the bag B2.

The profile element 21 includes a pair of male projections 23 which are adapted to received within the complementary female recesses 24 in the profile element 22. Either one or both of the male projections 23 may be provided with deformations 23a at spaced intervals along the length thereof to provide an intermittent clicking sensation as the profile elements 23 are pressed into interlocking relation along the length of the profile elements to close the reclosable fastener thereby providing confirmation by sound and/or touch to the user that the fastener 20 is closed.

Referring to Figs. 5 and 5a, there is illustrated another embodiment of the invention similar to the one illustrated in Figs. 4 and 4a. Corresponding parts have been identified with corresponding reference characters. In the embodiment illustrated in Figs. 5 and 5a, the reclosable fastener 20' is provided with interlocking reclosable profile elements 21' and 22' secured throughout the length thereof to the respective side walls 17', 18' of the bag B2'. The profile element 21' is provided with male projections 23' and the interlocking profile element 22' is provided with recesses 24'. Either one or both of the recesses 24' are provided with deformations 24a' at spaced intervals along the length thereof to provide an intermittent clicking sensation as the profile elements 21' and 22' are pressed into interlocking relation along the length thereof to close the reclosable fastener 20' thereby providing confirmation by sound and/or touch to the user that the fastener 20' is closed.

Referring to Figs. 6, 6a and 6b, there is illustrated another embodiment of the invention similar to the ones illustrated in Figs. 4 and 5. The corresponding parts have been identified with corresponding reference characters. In the embodiment illustrated in Figs. 6, 6a and 6b the reclosable fastener 20" is provided with a profile element 21" and an interlocking profile element 22" secured throughout the length thereof to the respective side walls 17", 18" of the bag B2".

The profile element 21" is proved with male projections 23" and the interlocking profile element 22" is provided with recesses 24". Each of these interlocking profile elements is provided with deformations 23a" and 24a" at alternating spaced intervals along the length thereof to provide an intermittent clicking sensation as the profile elements 21" and 22" are pressed into interlocking relation along the length thereof to close the reclosable fastener 20" thereby providing confirmation by sound and/or touch to the user that the fastener is closed.

As may be seen in Figs. 6, 6a and 6b the deformations 23a" on the male projections 23" are spaced along the length thereof and offset from the deformations 24a" in the mating grooves 24". Thus when the interlocking profile elements 21" and 22" are pressed together to close the reclosable fastener 20" the deformations 23a" in the male projections 23" will engage a non-deformed section of the mating groove elements 24" and the deformations 24a" in the groove elements 24" will engage a non-deformed section of the male projections 23". While deformations 23a' have been shown on both of the male projections 23" and the deformations 24a" have been shown on both of the mating groove elements 24" it is to be understood that they may be provided on only one of the male projections 23" and one of the mating grooves 24" if desired.

It is to be understood that fastener structures having reclosable interlocking profile elements of other configurations may be utilised so long as at least one of the profile elements is deformed at spaced intervals along the length thereof to provide an intermittent clicking sensation as the profile elements are pressed into interlocking relation along the length thereof to close the reclosable fastener thereby providing confirmation by sound and/or touch to the user that the fastener is closed.

Claims

1. A fastener structure for a thermoplastic bag, comprising reclosable interlocking profile elements adapted to be secured throughout the length thereof to the respective side walls of the bag, at least one of said profile elements being deformed at spaced intervals along the length thereof to cooperate with non-deformed portions on the other profile element, the deformations being constructed and arranged to provide an intermittent clicking sensation as the profile elements are pressed into interlocking relation along the length of said profile elements to close fastener structure thereby providing confirmation by sound and/or touch to the user that the fastener structure is closed.

2. A fastener structure according to claim 1, wherein both of said profile elements are hook-shaped.

3. A fastener structure according to claim 1 or 2, wherein said profile elements are formed integral with the respective side walls of the bag.

4. A fastener structure according to claim 1, 2 or 3, wherein both of said profile elements are deformed at alternating spaced locations.

5. A fastener structure according to any preceding claim, wherein said profile elements are male and female elements.

6. A fastener structure according to claim 5, wherein said male profile element is deformed at spaced intervals along the length thereof.

7. A fastener structure according to claim 5, wherein said female profile element is deformed at spaced intervals along the length thereof.

8. A fastener structure according to claim 5, wherein said male profile element is deformed

at spaced intervals along the length thereof and said female profile element is deformed at spaced intervals along the length thereof which alternate with the spaced intervals on said male profile element.

9. A fastener structure according to any preceding claim, wherein said reclosable interlocking male and female profile elements are in the form of rib and groove elements respectively.

10. A fastener structure according to claim 9, wherein said rib element is deformed at spaced intervals along the length thereof.

11. A fastener structure according to claim 9 or 10, wherein said groove element is deformed at spaced intervals along the length thereof.

12. A fastener structure according to claim 1, wherein the deformations are be in the form of a depression in an edge of at least one of the interlocking profile elements.

13. A thermoplastic bag having a mouth along which is disposed a fastener structure according to any preceding claim.

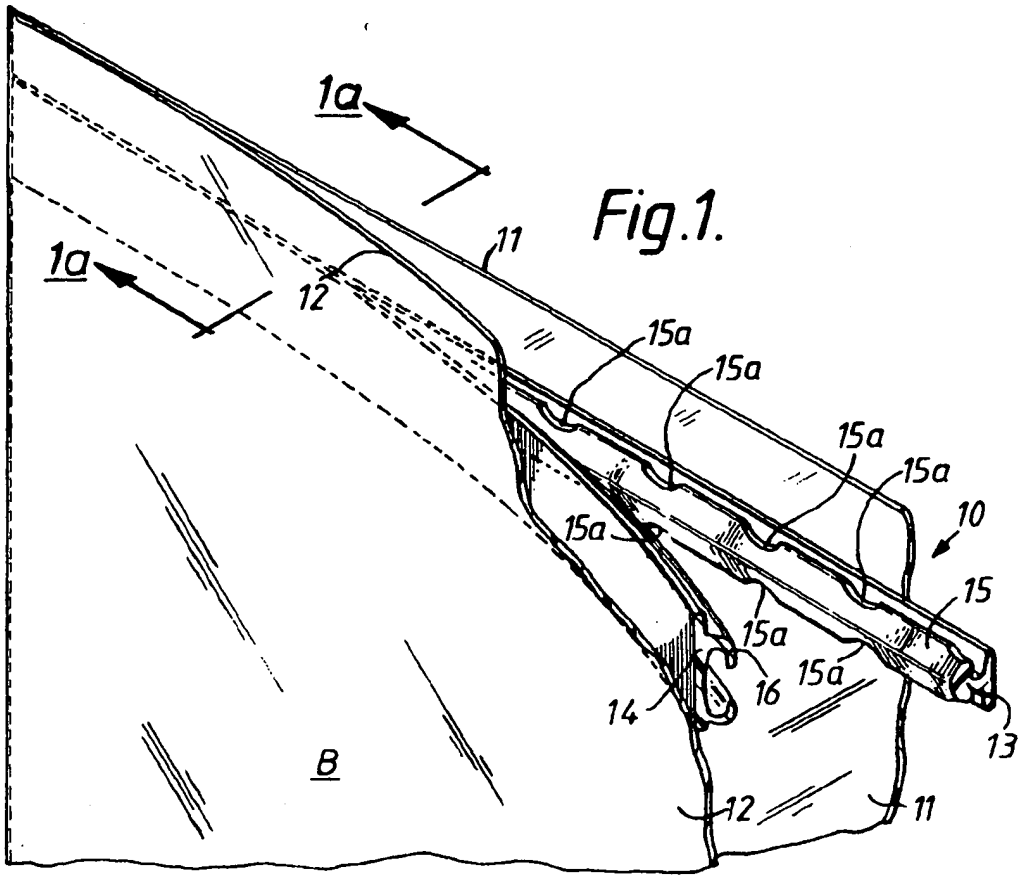
1a
1a
11
12
15a
15a
15a
15a
15a
10
15
15a
15a
16
14
13
B
12
11

Fig.1.

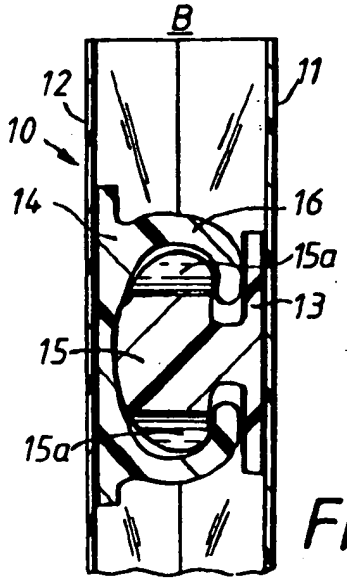
B
12
11
10
14
16
15a
13
15
15a

Fig.1a.

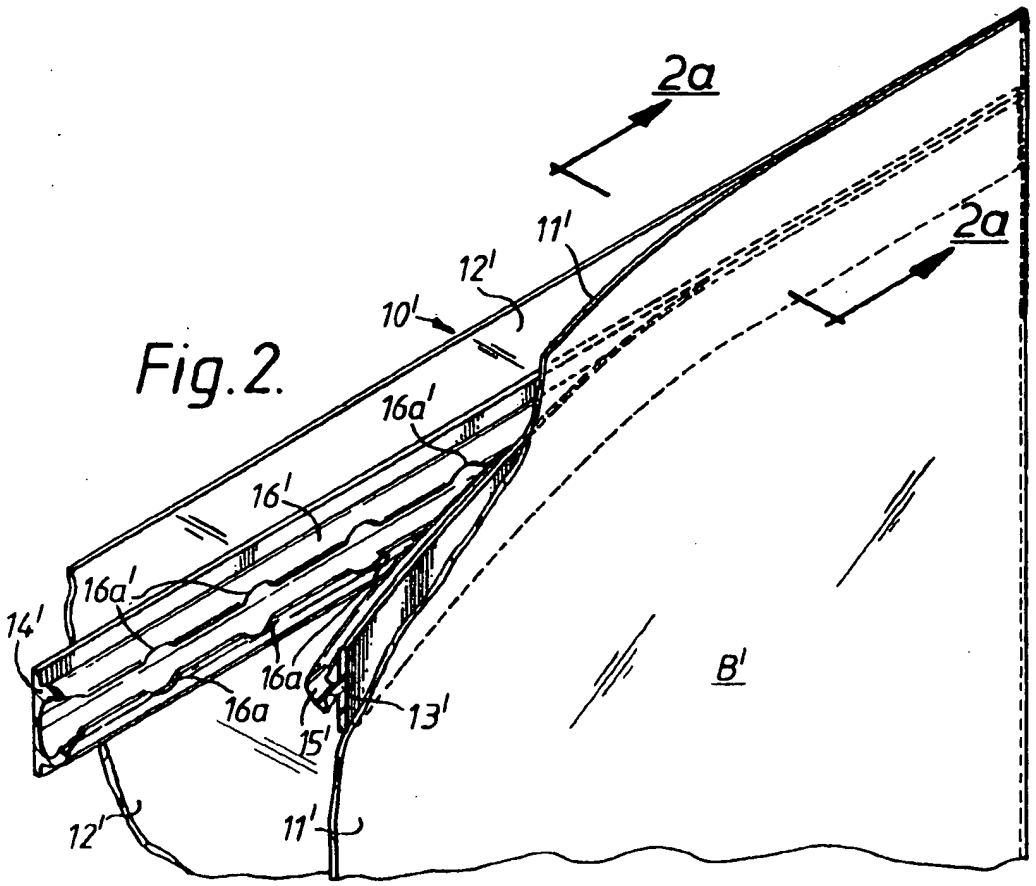
2a
2a
11'
12'
10'
16a'
16'
16a'
14'
16a
16a
15'
13'
B'
12'
11'

Fig.2.

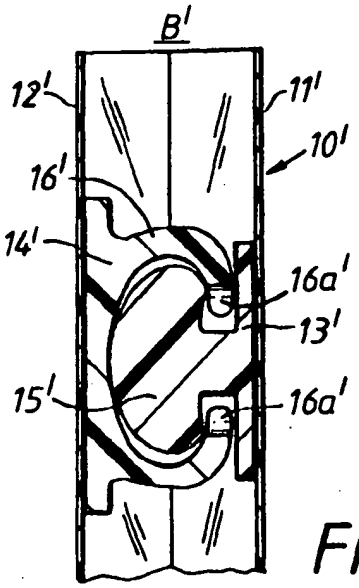
B'
12'
11'
10'
16'
14'
16a'
13'
15'
16a'

Fig.2a.

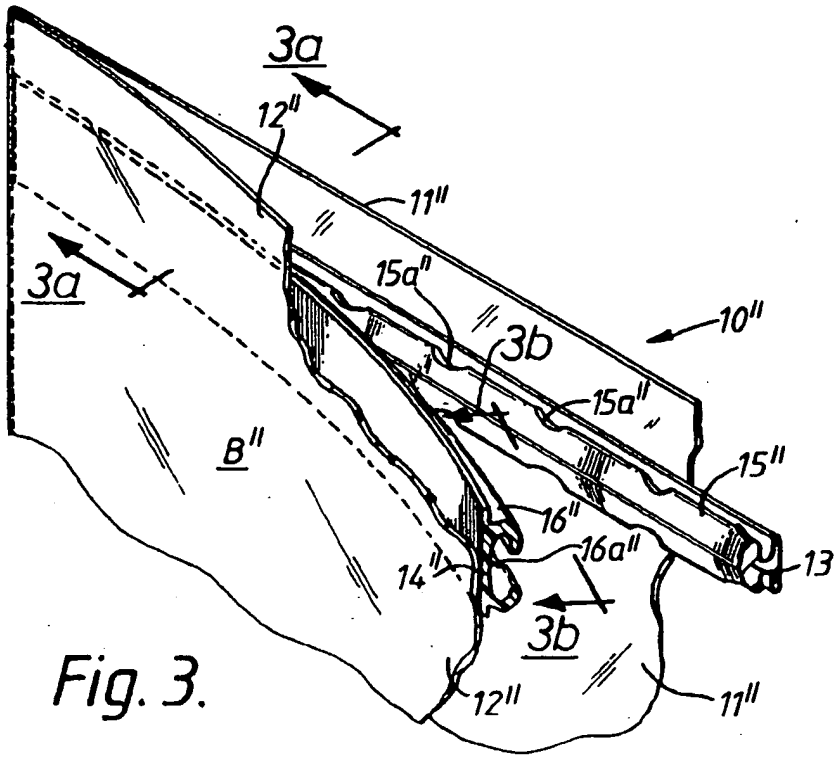

Fig. 3.

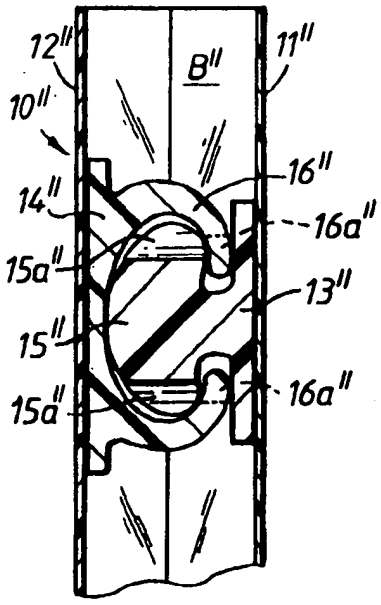

Fig. 3a.

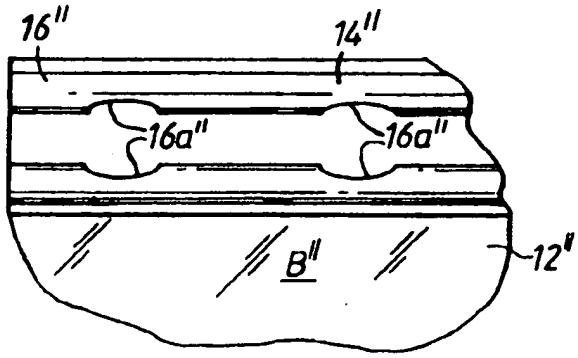

Fig. 3b.

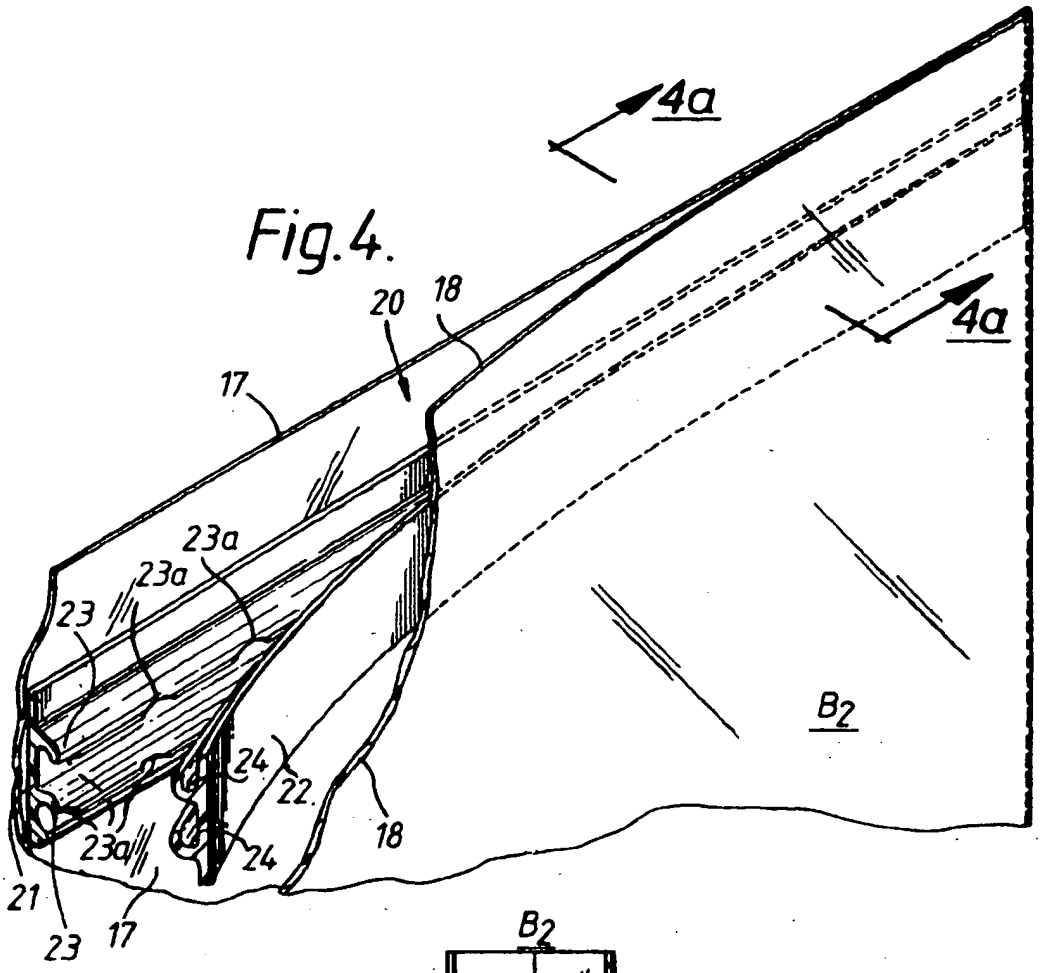
4a
4a
20
18
17
23a
23a
23
24
22
24
18
23a
21
23
17
B2

Fig.4.

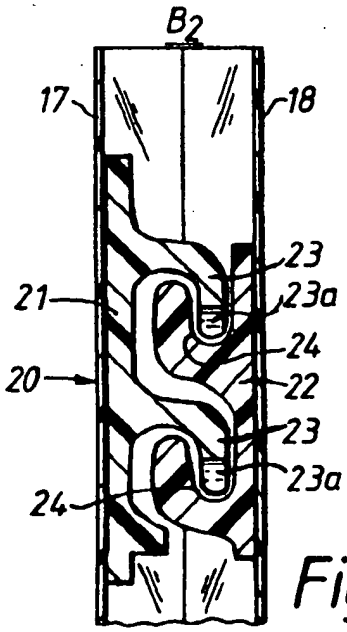
B2
17
18
23
21
23a
24
20
22
23
23a
24

Fig.4a.

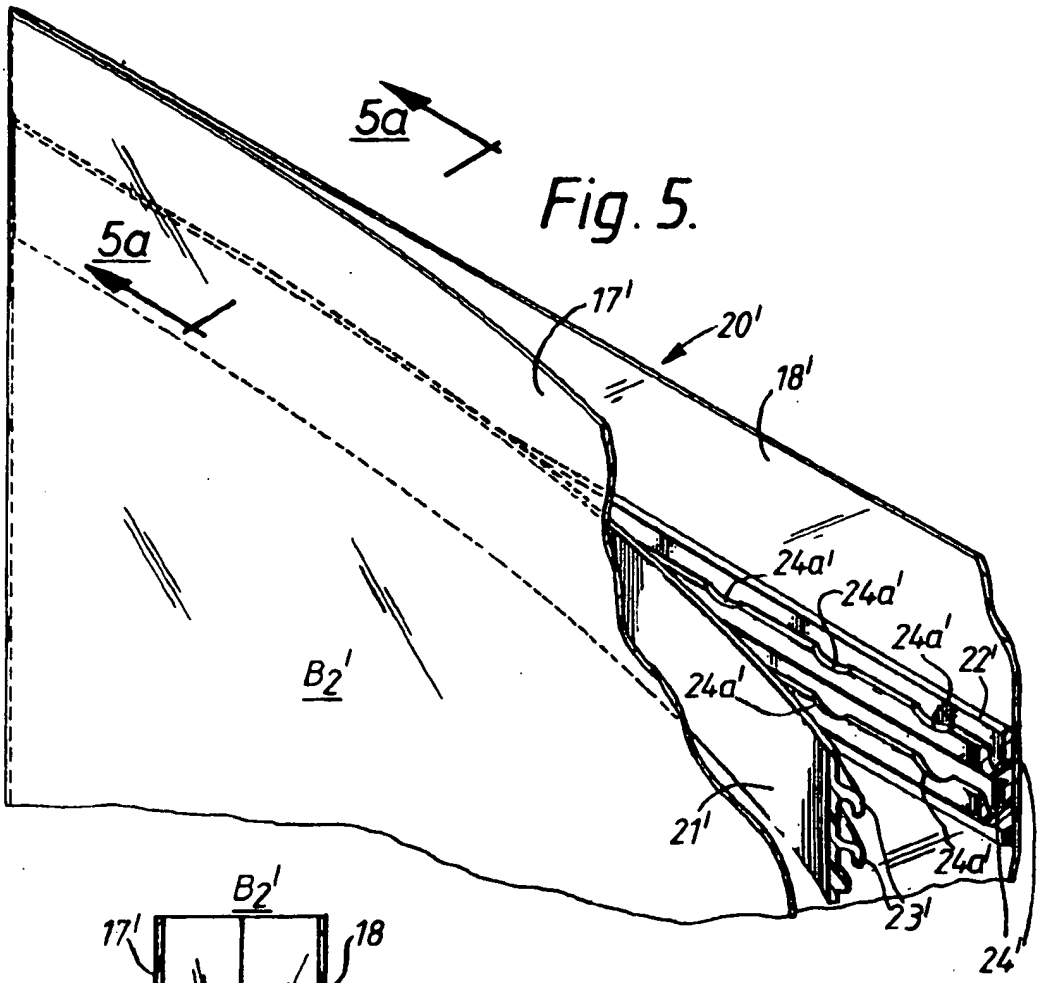
5a
5a
17'
20'
18'
24a'
24a'
24a'
22'
24a'
B2'
21'
24d
23'
24'

Fig. 5.

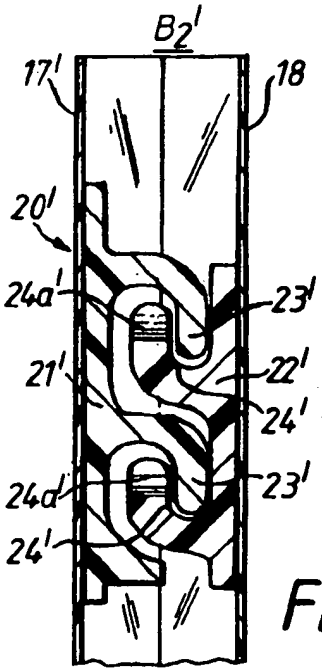
B2'
17'
18
20'
24a'
23'
21'
22'
24'
24d
23'
24'

Fig. 5a.

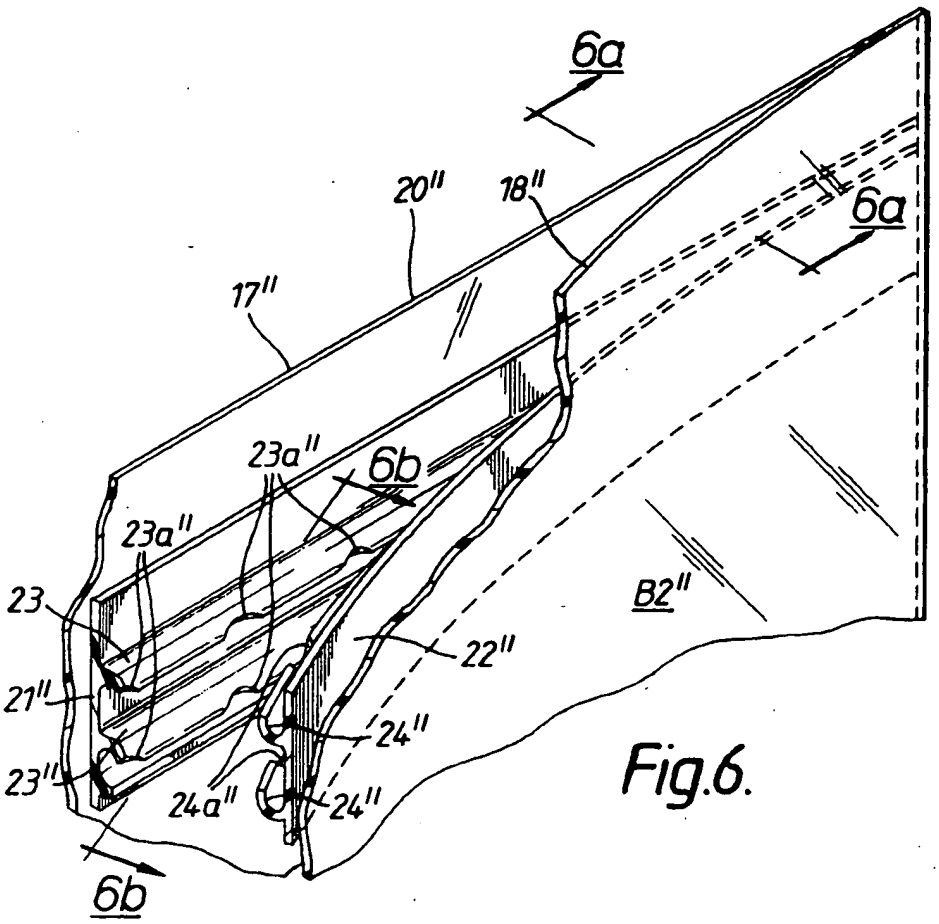

Fig.6.

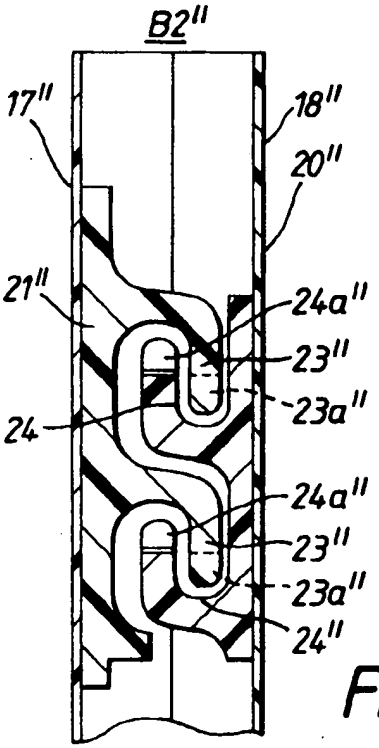

Fig.6a.

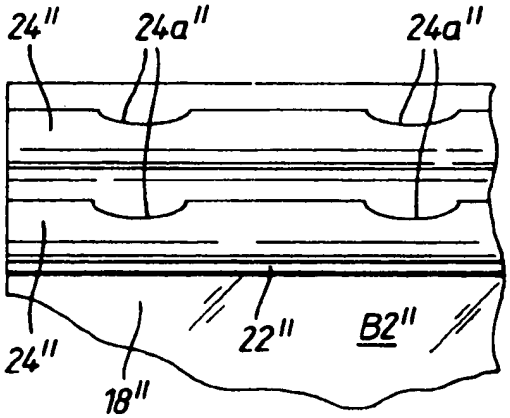

Fig.6b.

European Patent Office

EUROPEAN SEARCH REPORT

Application Number

EP 92 30 1996

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
P,X	EP-A-0 446 760 (DOW BRANDS INC) * the whole document * ---	1-13	A44819/16
A	FR-A-1 036 544 (R. PODOLSKY) * page 4, column 2, line 31 - line 53; figures * -----	1	

TECHNICAL FIELDS SEARCHED (Int. Cl.5)

A44B
B65D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	26 JUNE 1992	M. VANMOL

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